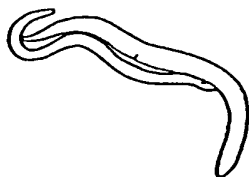FIG. 1

intact
approaches vulva

stops at vulva

inserts spicules and transfers sperm

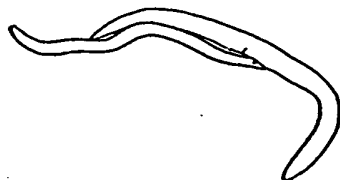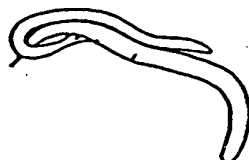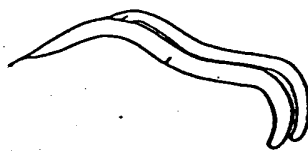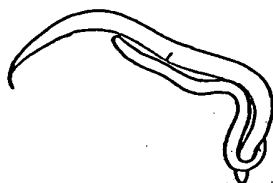## hook ablated
approaches vulva

passes vulva

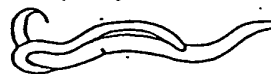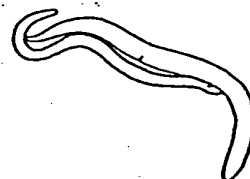### circles hermaphrodite

initiates a slow search for the vulva using the p.c.s. and spicules (t=300s)

lov-1(sy552)
approaches vulva

passes vulva

circles hermaphrodite
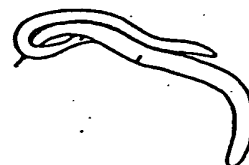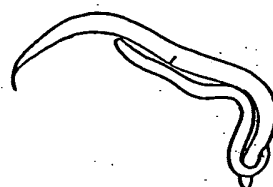
stops at vulva

inserts spicules and transfers sperm
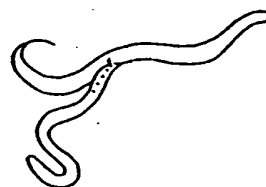
Figure 2

A. *lov-1(sy552)* rescue data

```
0.1 map unit
|————————|
```

Rescue
lov-1(sy552)

genetic map
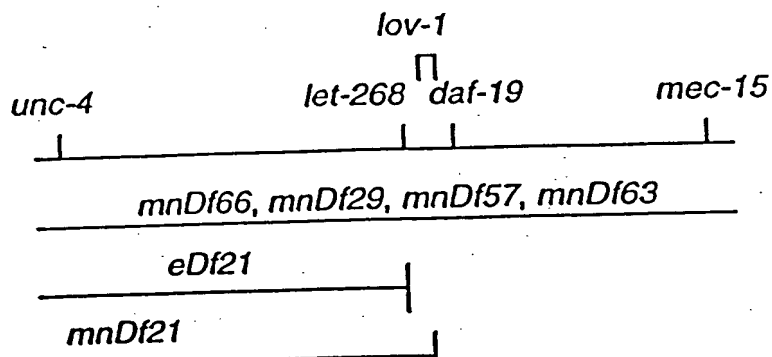
lov-1
∏
unc-4   let-268 daf-19   mec-15

mnDf66, mnDf29, mnDf57, mnDf63   −

eDf21   +

mnDf21   −

physical map

cosmids:

C18D1   − (0/2)

ZK945   + (4/5)

F27E5   − (0/3)

H   ←——— ZK945.9   ←——— ZK945.10   H

plov-1.1   + (6/8)

plov-1.2   A   − (0/3)

plov-1::GFP1   GFP   B   H   − (0/2)

plov-1.3   GFP   Stul (premature stop)   − (0/2)
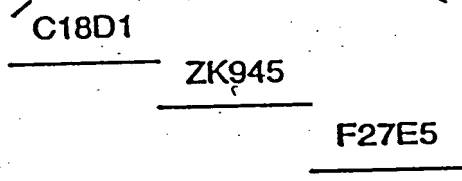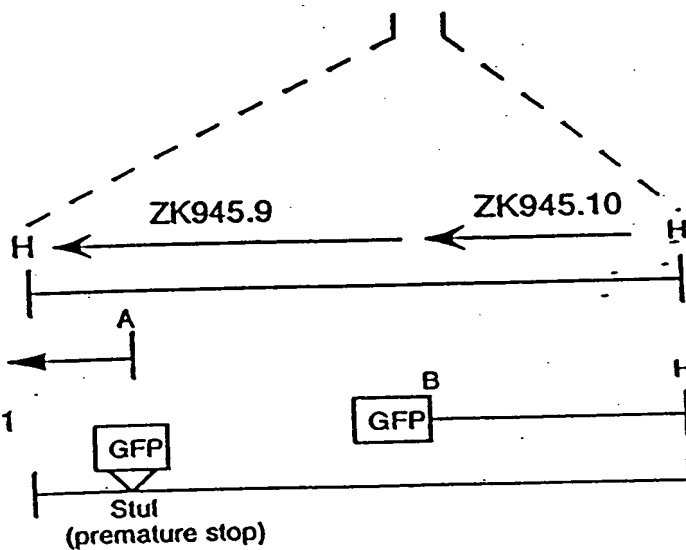
FIGURE 2β

B. *lov-1* gene structure: 16.7 kb rescuing clone

RT-PCR confirmed exons

predicted exons

— 1 kb

5'

ZK945.10

ZK945.9

3'

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z AA BB CC

sy582Δ
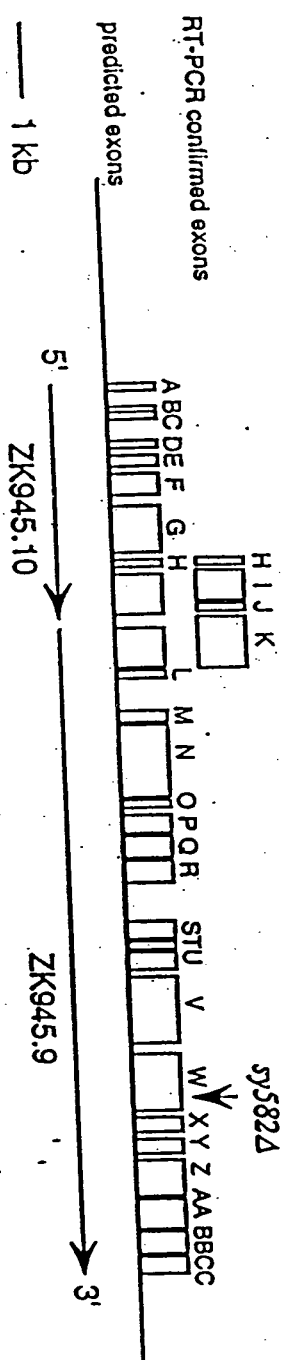
C. Schematic of GFP fusion constructs and expression data

	EXPRESSION PATTERN	DOMINANT NEGATIVE
plov-1::GFP1	strong, male specific sensory neurons: CEMs, rays, HOB	Yes
plov-1::GFP2	faint, non-sex specific	No
plov-1::GFP3	faint, male specific: one or two unidentified neuron(s)	No
plov-1::GFP4	faint, non-sex specific	No
plov-1.3	faint, non-sex specific	Yes
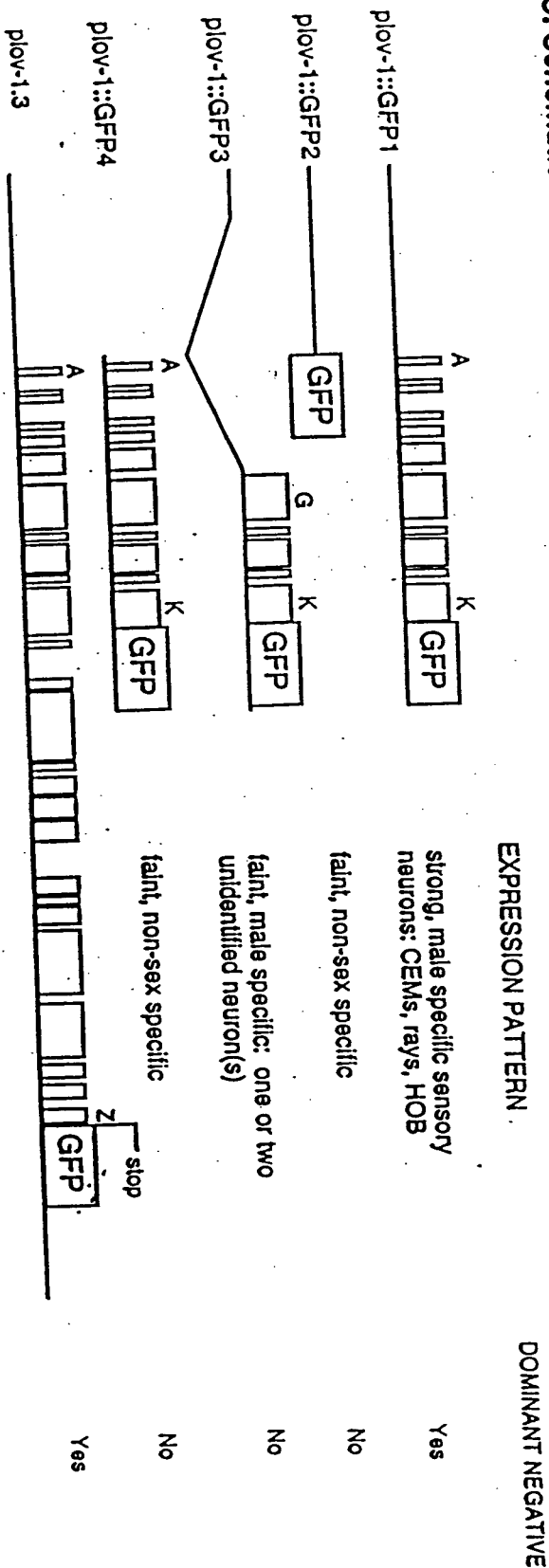
D. LOV-1 structural features and sequence homologies
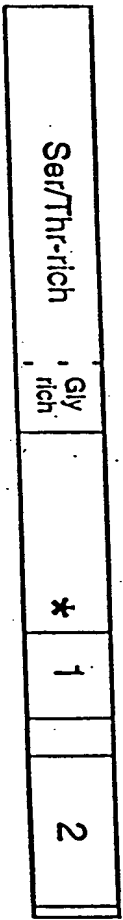
LOV-1

PKD1

PKD2

PKDL

Y73F8A.B+A (913 aa)

| Ser/Thr-rich | Gly rich | * | 1 | 2 |

26% (269)   20% (668)

1 | 2

20% (558)

2

21% (586)

2

26% (352)

2

coiled-coil

F16.3

A. *lov-1* genomic structure and GFP fusions

	Behavioural phenotypes	*lov-1*(sy552) rescue	Expression pattern	Subcellular localization
			wild type	wild type

RT-PCR confirmed exons   HI J K   sy582Δ

predicted exons   A   L   CC

lov-1.1 — *lov-1*(sy552) rescue: + (6/8)   +

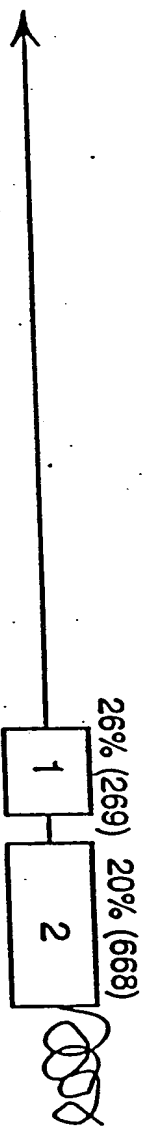1 kb   5' ZK945.10   ZK945.9   3'

lov-1::gfp1 — A ... K GFP — − (0/2) — DN — male-specific sensory neurons: CEMs, HOB, rays — Basodendritic (Cell body, sensory ending)

lov-1::gfp2 — GFP — + — faint, nonspecific

lov-1::gfp3 — G K GFP — + — faint, male-specific: 1 or 2 unid'ed neurons

lov-1::gfp4 — A K GFP — + — faint, nonspecific

lov-1,3 — A ... stop GFP — − (0/2) — DN — not expressed

lov-1::gfp5 — A ... partial CC GFP — − (0/3) — + — male-specific sensory neurons: CEMs, HOB, rays — Cell body only

B. *pkd-2* genomic structure and GFP fusions

sequenced cDNA yk219e1

predicted exons

1 kb   Y73F8A.b   Y73F8A.a

pkd-2::gfp1 — GFP — −   + — male-specific sensory neurons: CEMs, HOB, rays nonspecific, ring neurons (weak) — Uniform (cell body, axon, dendrite)

pkd-2::gfp2 — GFP — −   + — male-specific sensory neurons: CEMs, HOB, rays — Basodendritic (Cell body, sensory endin...
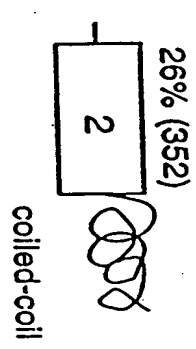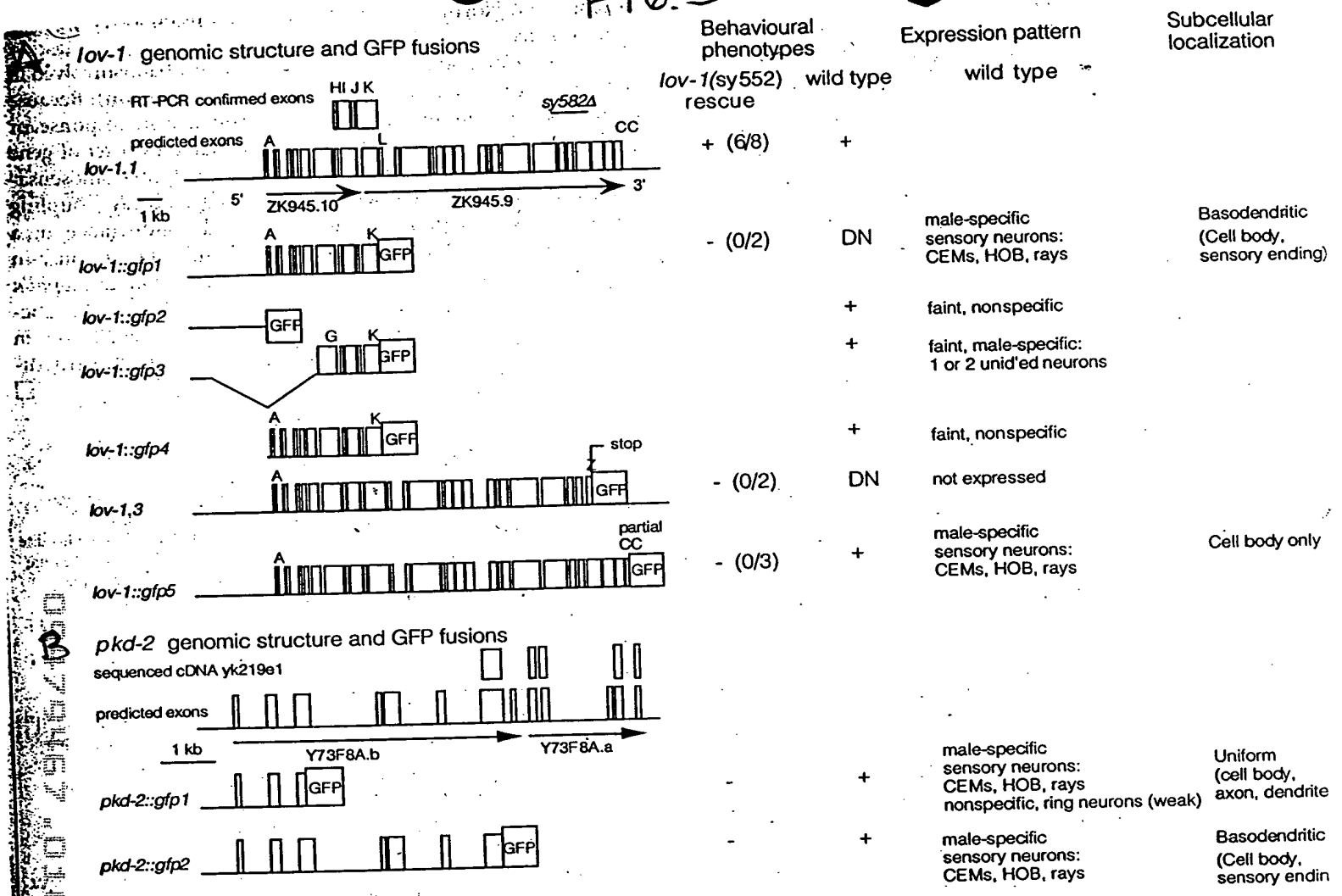
Figure 3 *lov-1* and *pkd-2* genomic structures, constructs, rescue data and expression patterns. The line above the *lov-1* gene indicates the 1,055-bp deletion in *lov-1(sy582Δ)*.

Numbers in parentheses indicate the ratio of rescuing stable lines to the numbe... stable lines examined. DN, dominant negative.
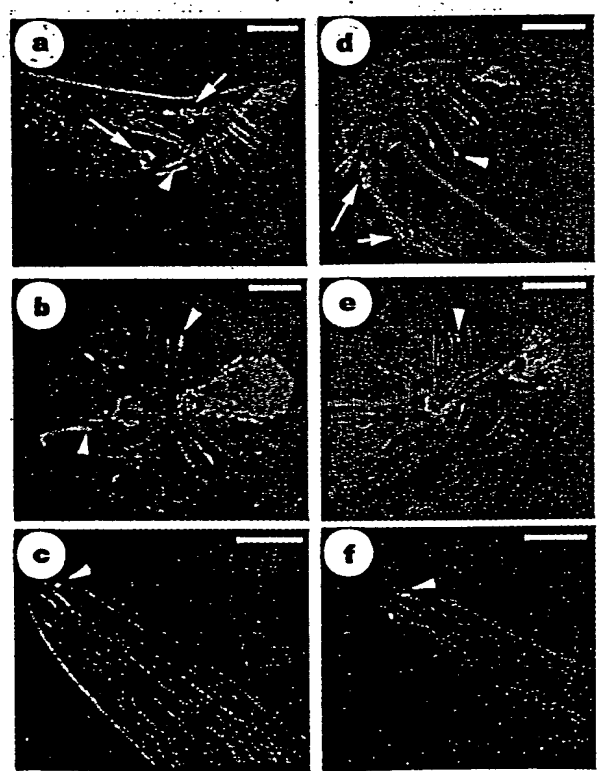
FIG 4

Figure 4 LOV-1::GFP1 and PKD-2::GFP2 are colocalized to adult male sens... cell bodies and dendrites. The spicules, hook structure and posteriormost fa... autofluoresce. Arrows, neuronal cell bodies; arrowheads, dendrites or ciliate... images (merged DIC and fluorescence) were obtained using confocal micros... a–c, *lov-1::gfp1*. a, HOB and ray cell bodies (arrows), HOB dendritic process (... b, HOB and ray process 5 (arrowheads). c, Ciliated endings in nose tip from m... cephalic CEM neurons (cell bodies not shown). d–f, *pkd-1::gfp2*. d, Ray cel... (arrow) and ray process 2 (arrowhead). e, Ray process 5 (arrowhead). f, Mal... cephalic CEM ciliated endings (arrow). Scale bar, 20 μm.